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Faculty Working Papers

Changing Food Habits and the New Youth Culture: Nutritional Challenge for an Affluent Society

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#46

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Introduction

U. S. diets have been declining despite rising income and education. This is now a well known fact.

It raises many questions. To what extent do changing food habits account for the decline? Why should this occur? What can nutritionists and dieticians do to improve the food habits of the population?

These are large questions. In this brief discussion paper, it is possible to take a look at only a few selected aspects.

In Part I, I should like to contrast the expectations and the reality of U. S. diet changes.

Part II will consider the emergence of the new youth culture. An understanding of this group is very important, for it is here that good diets are getting turned off and never turned on again. As a result, there are serious implications for the next generation.

In Part III, I should like to touch base with a very volatile subject: the federal food programs. To what extent can they elevate the nation's diets?

Part IV will consider the various options available for raising diet levels.

And finally, in Part V, I should like to consider a very key question: "What can dieticians do to improve food habits and raise the quality of community diets?

Part I

I. The Expectation: U.S. Diets Should be Improving

It was a reasonable expectation U.S. diets would improve steadily in the years since World War II.

Real income has been rising. Real median U.S. family income rose from $5,000 in 1947 to nearly $10,000 in 1970.[1]

Meanwhile poverty has declined sharply. The percent of families classified in poverty declined from 26 percent in 1949 to just nine percent in 1970.[2]

Median education has risen. Median years of education rose from 6.6 in 1940 to 12.1 in 1971.[3] The rise in educational attainment of the younger population 20 to 29 years of age, completing four years of high school or some college, has risen from 62.1 percent in 1960 to nearly 80 percent in 1971.[4] One would expect this ever more educated population would be much more knowledgeable and sophisticated about foods than earlier generations.

The variety of foods available to the population has increased spectacularly. It is estimated the number of items available in average food supermarkets has risen from about 1,000 in 1940 to 8,000 in 1970.[5]

The ability of households to preserve foods has undergone revolutionar improvement. In 1940 only 44 percent of U.S. households had mechanical refrigeration. By 1970 the percent had risen to virtually 100.[6]

The access of the population to shopping centers has undergone tremendous improvement. By 1970 it is estimated somewhat over 95 percent of all U.S. households, were within less than one hour's commutting time to a shopping area of at least 25,000 population.[7] Almost all economically viable and active families had automobiles or trucks by 1970.[8]

American families have more discretionary income than ever before. In 1960 U.S. consumers spent 20 percent of disposable income on food. By the fourth quarter of 1971, this percent had declined to 15.9, the lowest in the history of this country and the lowest for consumers in world history.[9]

As a consequence of rising discretionary income, the per capita consumption of food in this country has risen steadily, the per capita index reaching an all time high of 103.6 in 1971. This represents a seven percent increase over 1960.[10]

The nation's stock of knowledge about the structure of foods and nutrient needs has increased steadily as a result of continued research by food technologists, mutritionists and dieticians.

In the light of all these favorable factors, it was a reasonable expectation U.S. diets would improve in the 1960's. Many knowledgeable persons believed the battle for good nutrition was nearly won.

II. The Reality: Declining Diets, 1955-1965

In view of the reasons to expect improving diets, many persons were surprised at the reality, 1955-1965. Instead of reporting better diets, the results of the 1965-66 Household Consumption Survey of the U.S. Department of Agriculture, first published in early 1968, reported declining diets 1955-1965.[1]

Households with diets rated "good" (per person daily intake equal to or above the full Recommended Daily Allowances for seven nutrients) declined from 60 to 50 percent.

Households with diets rated "poor" (less than two-thirds of RDA for one or more nutrients) increased from 15 to 20 percent.

It is important to keep in mind that average diets at all income levels were reported as adequate in terms of the Recommended Daily Allowances established by the Food and Nutrition Board. Decline arose not so much from quantities as from qualities. Many diets at all income levels were inadequate in terms of one or more nutrients. Iron, vitamins A and C (ascorbic acid) and calcium were particularly lacking.

Part II

III. Declining Diets and the New Youth Culture

There are many socioeconomic changes taking place in our society which account for rising income and education, and at the same time, for declining diets.

These changes involve among others, the emergence of a new youth culture. For the moment, I should like to focus attention on the implications of this new youth culture for nutrition. They are not good.

To understand the significance of and reasons for, the new youth culture, it is necessary to go back several generations. In 1900, youth matured relatively late in the life cycle because of poor diets and health hazards, particularly the childhood diseases. A century ago teenage girls did not reach the age of menarche until 16, 17, sometimes 18 years of age.12/ Biological maturity was conterminous or followed very quickly. Almost all youth were through school by that age. We can define social maturity as that age when education has been completed, and basic decisions made concerning occupational and family life. Therefore, in 1900 when most youth married and were able to conceive children, they had already arrived at both biological and social maturity. They usually remained within the orbit of old family unit before starting a new independent life.

What has happened as we come toward the present? Economic progress has brought rising real income, urbanization, greater mobility. Advancing medical technology has virtually eliminated the childhood diseases which were such a heavy drain on youth in the past.

As income and health improved, the age of menarche began to decline. Now teenage girls reach this age at 12.[12] Some medical authorities predict it will decline to 11 years, or the fifth school grade by the end of the 1970's. Thus there has emerged a very long stretch, of at least seven years between the end of childhood and the achievement of full physical maturity.

Meanwhile, what has happened to social maturity. This age, instead of declining has been moving in just the opposite direction. It has been ever rising. The requirements of an ever more sophisticated society require longer and longer years of general education, career selection, occupational training. About half of all U. S. youth, 18 and 19 years of age, are still in school.[13] And many of those not in school, are still trying to make basic decisions about jobs, marriage, family.

The year 1960 appears to have been a watershed year in our affluent society. The median age of marriage for women declined slowly from 22 years in 1890 to 20.3 in 1960.[14] Then it started to rise. The median age of marriage for women rose from 20.3 years in 1960 to 20.9 in 1971.[15] This is a rise of one half year in a single decade. The percent of young men and women remaining single to age 35 has been rising. Last year, 45 percent of all women under 35 were still single. This is an eight percent increase over 1960.[16]

Attitudes of youth toward sex and family life appear to be undergoing revolutionary change. Whether the older generations like it or not, premarital sex without conception, is approved by an overwhelming majority of college students today.[17]

It is probably too early to draw firm conclusions, but it appears at the moment, that attitudes toward having children is also undergoing revolutionary change. It was expected that Baby Boom I of the 1950's would be followed by Motherhood Boom I of the 1970's which in turn would bring on Baby Boom II. So far it has not. So far, we are observing a Baby Bust.[18/] Instead of turning up after 1968, along with the rise in the percent of U.S. women in the prime child-bearing ages, the fertility rate (births per 1,000 women aged 15 to 44) has taken an astounding plunge. In 1957 at the peak, the rate stood at 123. By December of last year (latest date available) the rate was 77.[19/] This touches the lowest levels reached in the Great Depression of the 1930's. The so-called "now" generation is saying "later" or "maybe" or possibly "never". The "On" generation is, at least for the time being, definitely turned "Off". Confirming evidence comes from the child-bearing expectations of wives, 18 to 24 years of age. The average number of children expected has fallen from 3.2 in 1955 to 2.9 in 1967 and down sharply to 2.4 in 1971.[20/] In summary then, it is reasonable to conclude that social maturity, as defined, is being postponed later and later. For many it is 22 years of age and beyond.

Now look at the beginning of biological maturity and the achievement of social maturity. It's a very wide gap from age 12 to age 22 or beyond. This is ten years. This is the stretch that has given rise to a new youth culture. It will widen even more in the future.

What are the implications of the new youth culture for nutrition. They are considerable. They are, at the moment, largely negative.

During the long 10-year stretch there emerges a youth culture in which certain patterns and habits are formed independently and outside of strong parental controls. Independence now comes very early in life. And then what happens? I should like to summarize from recent nutrition research.

First, youth receive a poor and deteriorating nutrition legacy from parents. Studies report that 80 to 90 percent of U.S. housewives say they serve nutritious, balanced meals. But the study of what they actually serve reveals otherwise.[21] Nutrition knowledge is spotty and impressionistic. There is little awareness some foods need to be eaten together to achieve nutrient balance. There is limited awareness the body does not store certain nutrients. They have to be eaten every day. There is little awareness that many bulk, filling foods, contain few, if any, vitamins or minerals. Knowledge of the micronutrients, even among the most highly educated, is extremely low.[21]

Second, the old traditional pattern of the family eating together for three well defined meals, is disintegrating. Because of changing life styles, different daily activities and hours of family members, it is difficult to schedule meals. Therefore the average housewife spends less and less time in cooking well balanced meals and more time serving as an inventory controller of foods to be selected and consumed by each family member individually. This sharply limits food varieties, increases use of limited variety convenience foods.[22]

Third, with the rise of individualized food habits, selection is based less on nutrient content and more on taste, that is, sensory gratifi-

cation. The result is rising consumption of fats, carbohydrates, protein, and a decline in consumption of milk products, vegetables, salads, fruits.[23]

Fourth, the pattern of individualized eating habits has resulted in a rise in snacking-- again with the same result--a trend toward limited variety foods, with particularly adverse effects on daily intake of iron, vitamins A and C.[23]

Fifth, the deemphasis on food has led to meal skipping. One study reported 50 percent of U.S. school age children either have no breakfast or a very inadequate one. Another study reports 25 percent of housewives skip lunch and another very large percent had an inadequate lunch.[23]

Sixth, more eating out, and in a hurry. A large part of the food consumed away from home comes from fast-service, drive-in restaurants. Very good food, but extremely limited in variety, again with adverse effects on vitamins A and C, iron, calcium. The standard youth fare for lunch and dinner has become a hamburger, French fries or potato chips and a coke.

Seventh, the nutritional knowledge of youth is very low. Not only is the legacy from parents limited, but the educational institutions and news media do a very poor job of providing even a minimum of nutrition knowledge.[24]

Eighth, as a result of the combination of factors cited above, there is considerable evidence that the fairly good diets of many small children decline in quality as they move into the teenages and adopt the new youth culture.[25]

The poor food habits of the youth culture are formed over the long stretch from 12 to 22 years of age. By 22 they are firmly set. How strong? Very strong. This was demonstrated recently by Dr. George G. Graham, Professor of Nutrition, The Johns Hopkins University.

He wanted to find out what the best trained and highest I.Q. young persons were eating as a matter of preference. He chose the doctor's dining room of the Johns Hopkins Hospital, known for its excellent cuisine prepared by the country's top dieticians. He set up a hidden camera and took pictures of the lunches eaten by the interns and the young resident physicians. Now these were among the highest I.Q. people in the nation. They had the best medical training possible. They knew all about nutrition. What did they eat? His pictures revealed two things. First they ate in a hurry. Secondly, they ate - hamburgers, hot dogs, potato chips and cola drinks. There were several exceptions. Several had pie and coffee.[26/]

In summary then, the food habits of the new youth culture are formed in an environment that is highly urbanized, involves early decision making, is based largely on taste. Food has a low priority among many pressure activities. It is eaten quickly. It is eaten intermittently. It is often eaten individually. It tends to be very limited in variety. It is particularly short on dark green and yellow vegetables and fresh fruits. This accounts for the shortfall in vitamins A and C. These food habits are deeply set by the early teens. They are part of the culture of an affluent society. They are not apt to be readily changed. There is no possibility of going back to the life styles and food habits of earlier generations.

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IV. The Youth Culture and Television

The rise of TV watching has had considerable impact on food habits. I know of no scientific study of TV's effects but they must be considerable in several ways.

First is the direct effect on eating habits. TV watching encourages, in fact almost requires, snacking and the use of convenience foods. Potato chips, hamburgers, french fries and chicken from the Colonel, are all good foods, but limited in variety. This limited consumption moves family members away from the wide variety bowl servings of food passed around the table. Imagine what would happen if five or six members of a family are around the table and things get exciting when TV's John Wayne corners the renegades at the cut-off. Someone would be sure to get a full ladle of mashed potatoes or green beans right in the lap or maybe higher up. The family type of round the table eating is going out of fashion. And with it, probably much in nutrient variety.

The indirect effect of television is what people learn about nutrition from this media. If TV has become a substitute for home gardening or reading, just how much nutrition education comes through? Not very much and most of what does appear, comes in the ads for specialized proprietary preparations.

Consider for a moment the promotion of ifon tonics. The scene opens with a beautiful career woman arriving home crisp and chipper after a hard day at the office, surrounded by admiring children and a devoted handsome, healthy, successful husband. And they all say how wonderful she is and how well she takes care of everyone.

How does she do all this?

She takes care of herself?

And how does she do that?

She gets her iron everyday.

And how does she reach this peak of nutritional achievement? She takes Geritol.

And its so simple. You don't have to carry around a box of rattling vitamin pills. You just wait until you get home in the evening and then pour it in. What could be easier? After all, look what its done for Lawrence Welk. He's still waltzing at nearly 70. Wouldn't you like to be waltzing at 70?

The TV nutrition scene closes with some warm advice to the husband. Guess what? He needs Geritol too. Apparently the physiological needs of males is about the same as for females. This bit of nutritional knowledge must come as quite a surprise to members of the American Medical Association. How could they have overlooked something so fundamental for so long? I guess they don't watch enough TV.

Now what is wrong with daily doses of iron tonic?

For most people probably nothing. It may not do any good, but won't do any harm. It's like the lawn fanatic who wants to be the first to get a good start in the Spring. He puts out fertilizer in February. And what happens? Nothing, as any good agribiologist will tell you, the roots of the grass plants are dormant. They absorb nothing. So the first snow melt or Spring

rain flushes all the fertilizer off the lawn and down into the sewer. It does no good. It does no harm, either.

Yet there may be some harm to a population that convinces itself one can get "instant health" out of a bottle. To the extent vitamin taking reduces regular physical check-ups the results could be negative.

Perhaps the most disturbing aspect of TV nutrition advice is that it may reduce public interest in, and pressure for, fundamental research. Let me illustrate this by again referring to the problem of iron deficiency.

What do we really know about iron deficiency?

We know that a majority of U. S. children are anemic according to accepted clinical standards, before age one. This occurs at all income levels and even when the mother has had a carefully planned diet.[27/]

Why? We don't know.

We know this iron deficiency anemia in most children tends to correct itself by age five with no special input of iron. Why? We don't know. Why not in all children? We don't know.[28/]

Can the anemia found in preschool children be corrected by massive dietary supplementation with hematinics and iron fortified foods? Apparently not. Supplementation experiments so far have reported very little effect.[29/]

On the other hand, school age children receiving iron fortified milk or formula products, apparently do maintain significantly higher hemoglobin concentrations than unsupplemented control groups, although this likelihood needs further testing.[30/]

Consider the relation of iron to milk. Milk is an excellent food. Fortified with vitamins it is even better. A mother learns how good milk is

and makes certain her infant gets the best. The infant grows and looks healthy. But what is one of the causes of anemia in children? Too much milk--for too long. Unless fortified, milk contains little or no iron. So if dedicated mothers continue the milk diet too long, the anemia proneness of so many very small children is aggravated.[31] There is no substitute for a balanced diet at a very early age; the earlier, the better.

And what of adults, particularly women who may be anemic? Can this problem be corrected by diet. Perhaps, but not always, because some individuals lack the ability to absorb iron from food, even iron fortified foods.

What degree of anemia can one have before health is impaired? The answer is uncertain. There is a surprising difference between "laboratory" and "clinical" anemia. Doctors Peter Elwood and William Waters recently conducted a longitudinal study of women experiencing anemia as determined by laboratory tests. Yet clinical examinations over several years could find no apparent adverse effects on their health. They could find no clinical evidence to support the thesis that moderate anemia is "harmful".[32] It is self-evident there is much we do not know. Instant, unresearched solutions to iron deficiency problems will be harmful if they reduce the needed research in the subject area.

In summary then, the new youth culture has become addicted (along with adults) to TV watching. The direct affect has been in the direction of diet deterioration. The indirect effect has been to leave nutritional illiteracy at low levels.

V. Teenage Nutritional Illiteracy and Food Fads

One of the unfortunate consequences of teenage nutritional illiteracy is to make the new youth culture highly susceptible to food fads and "instant" health philosophies.

Recently, we have gone through the Vitamin E craze. Thousands of teenagers and young adults began popping handfuls of Vitamin E pills in their mouths on the belief it would prevent abortion, sterility, impotence, diabetes and many other ailments. Leading medical authorities had to point out there is no scientific basis for such claims.[33]

Then we had the Vitamin C craze begun by a Nobel prize winning biochemist, who, by some mysterious process of intellectual osmosis suddenly became overnight an authority on nutrition. Vitamin C, taken in enormous quantities was supposed to prevent colds and influenza.[34] Again it was necessary for more careful scholars to cite the evidence. Drs. Andrew Schwartz and Richard B. Hornick of the University of Maryland ran carefully controlled studies, after injecting volunteers with 100 viruses known to cause the common cold, giving Vitamin C to one group and placebos to the other. Their finding: no significant difference. Dr. Schwartz commented:

> "People who think vitamin C cures colds, will continue to use it...Americans today are a medication-taking public, for whom strong emotional appeals often override scientific facts".[35]

He might have added, one reason for this is the widespread nutritional illiteracy.

Perhaps among all the food fads the most serious health hazard of all, comes from the popularity of organic foods and Zen Macrobiotic diets. Able

to sustain themselves in an affluent society, large numbers of teenagers and young adults have formed counterculture communes which follow the vegetarian philosophy of the Japanese mystic, George Ohsawa. Some youth follow Zen Macrobiotic diets in the pursuit of spiritual awakening. Others follow them as a form of protest against the establishment. Still others have the belief that organic foods are a certain way to better health.

From a scientific viewpoint, the claims of Zen Macrobiotic diets are false. More than that they are hazardous and dangerous, especially for teenage girls who get pregnant. It has been necessary for the Council on Foods and Nutrition of the American Medical Association to issue a warning--pointing out that from the organic food population are coming cases of scurvy, anemia, hypoproteinemia, hypocalcemia, emaciation, loss of kidney function, some of which has led to death.[36/]

It is ironic, is it not, that youth with a strong interest in nutrition--the yin and the yan of Zen Microbiotics, end up with malnutrition? Again one can only conclude that one of the reasons for the susceptibility of teenagers to claims of exotic short cuts to good health, is their nutritional illiteracy. Society has failed somewhere along the way.[37/]

VI. Teenage Nutritional Illiteracy and the Next Generation

The combination of poor diets and poor knowledge has some obvious adverse effects not only on teenagers themselves, but on the infants born to teenage mothers. This is no little problem. Nearly 40 percent of all first born children in this country, have teenage mothers.[38/] About six of ten of these children are unwanted.[39/] Unwanted childbearing is "high risk" to the mothers with elevated rates of mortality and morbidity. Unwanted teenage childbearing is high risk for the children with elevated rates of mental retardation, nervous disorders, and various abnormalities. The role of poor nutrition is difficult to measure, but almost all authorities agree it is an important factor contributing to prematurity and dysfunctioning. And if the mothers are nutritionally illiterate, how good a job can they do in providing good diets as they raise their children? It is self-evident there is urgent need to reach teenage girls with good nutrition before they become pregnant. And this isn't being done effectively by anyone.

This problem seems to be uniquely an American problem. The incidence of teenage childbearing is much higher in this country than in other advanced industrial nations. It is a major factor in the fact our infant mortality rate is higher than a dozen other countries.[40/]

Part III

VII. Federal Food Programs: How Much Can They Improve the Nation's Diets?

To what extent can federal food programs, that is, food stamps for the poor and school lunches for all children, improve the nation's diets and offset poor food habits?

I should like to advance the thesis that neither food stamps or school lunches will do very much to raise diet qualities. They could turn out to be counterproductive.

I advance this thesis with due caution and trepidation. These instant political solutions to diet problems are extremely popular. Raising doubts about them is akin to attacking motherhood, fatherhood, brotherhood, childhood, the priesthood, and the Ten Commandments, all at once.

The federal food programs have been recommended by nutritionists and dieticians with prestigious reputations. They have been recommended by the 1969 White House Conference on Food, Nutrition and Health, the 1971 White House Conference on Youth, the 1971 White House Conference on Aging and more recently on March 7, 1972 by the National Advisory Council on Child Nutrition, in a special report to the President.

As a result of popular and professional support the federal food programs have expanded at an astounding rate.

Food stamp expenditures have risen from $340 millions in 1969 to $2.2 billions in 1972 and will rise to between 2.3 and $2.5 billions by fiscal 1973. The poor population participating has risen from 3 millions in 1969 to 11 millions in early 1972 and is expected ro rise to 13 millions in fiscal 1973. Currently, the program operates in 2,017 counties and will be expanded to virtuallly all of the nation's 3.047 counties by fiscal 1973.[41/]

The school lunch program, which served 6 million needy children in 1947, has expanded until in 1971 it served 25 million children of whom 7.4 million were from families classified in poverty.[42] It cost $1 billion in 1971.[43]

Total federal expenditures on both programs and the food commodity distribution program, which is now being phased out, will come to around $4 billions in fiscal 1972.[44]

The Food Stamp Program

Let me consider first the food stamp program. How could anyone have doubts about giving free or low cost food stamps to hungry poor people so they can buy a little more food? I suggest there are a number of reasons to have serious doubts about the effects on diets of the poor via the food stamp route. A brief summary follows:

1. There is abundant research available to indicate that food has a low priority in the expenditure patterns of the poor. Unless this is changed, the total amount spent on food, including cash value of the stamps, will remain about the same. The income released by food stamps will be spent on nonfood items.[45]

2. There is abundant research available to indicate that the major problem of diets among the poor (and the nonpoor) is qualitative not quantitative. Additional cash or food stamp bonuses will raise the quantities of food consumed, which is not the problem, but will do little or nothing to raise the variety of food purchased, which is the problem. Before food stamps, the poor welfare mother comes out of the supermarket with hamburger, potato chips, soda pop, cookies, canned peaches. After food stamps, she comes out with two pounds of hamburger, two sacks of potato chips, two cartons of soda pop, etc. This is what the kids want. This is what she will buy.[46]

3. There is abundant research available which reports the food habits of certain low income ethnic groups are very limited, but based on certain very strong cultural preferences. These are not changed by food stamps.[47]/

4. There is abundant research available which reports the level of nutritional knowledge among poverty families (as well as many not in poverty) is extremely low. There is nothing in the food stamp program that will raise the nutritional knowledge of these low income families.

5. To the extent that political leaders assume the food stamp program will improve the quality of diets of the poor, and as a consequence, relax or withdraw support from programs to raise the nutritional knowledge of the U.S. population, to that extent the food stamp program could be counterproductive.

School Lunch Program

Consider now the school lunch program. I submit there are numerous built-in limitations in this program which may be summarized as follows:

1. Children will receive school lunches only half the days of the year.

2. The maximum nutritional achievement of a school lunch is one third of Recommended Daily Allowances. One third of one half is 17 percent improvement during the year as a maximum.

3. Serving well balanced school lunches is only one step. Getting children to consume all the varieties of food is a second step. There is a high failure rate at this second step. Numerous reports indicate that, having already formed limited food tastes, children leave the kale, brocolli, spinach, bean salad, untouched. It is not possible to raise diet quality by filling up the nation's school garbage cans with unused foods rich in vitamins A and C. Our 17 percent is now reduced to probably not more than 10 percent, if that.48/

4. Children can be persuaded to participate in school lunches from ages 6 to around 14, after which the dropout rate rises sharply as youth food habits and independent decision making take over. Thus, the exposure to school lunches is around eight years over a life cycle of 67 years for males and 74 years for females, or about 12 percent of a lifetime for males, 11 percent for females. Twelve percent of 10 percent is about 1 percent--the possible elevation in lifetime diets.

5. The above estimate of one percent is probably too high. As responsibility for feeding children is shifted to the schools, there is apt to be a decline in parental concern about serving well-balanced meals at home. Why bother with time consuming food preparation at home if the kids will be well fed at school. So net effect of the school lunch programs is apt to be a fraction of one percent.

6. The school lunch program does little or nothing to raise levels of nutritional literacy and, therefore, does nothing to prepare children for the life styles of the new youth culture. Yet this is where good nutrition gets turned off.

7. The school lunch program does nothing to prepare youth for the nation's No. 1, adult dietary problem, overeating of fats and calories.

8. The school lunch program can do nothing to correct the major nutritional problem of teenage girls--namely, iron deficiency anemia. And this problem has been increasing with time.[79]

In summary then, statements, sometimes from very high places, that food stamps for the poor and hot school lunches for all school children, will put an end once and for all to "hunger and malnutrition", ~~may~~ provide psychic income to the issuer and obtain votes from a compassionate electorate, the harsh fact remains that neither program can do very much to raise the level of U.S. diets. The deficiencies of vitamins A and C and iron among teenagers are apt to remain as before.

Part IV

VIII. The Options: Improve Food Habits or Improve Foods?

There are at least four possible approaches to raising the quality of U.S. diets. They are: (1) nutrition education to improve food habits, (2) nutrient supplementation in school lunches, (3) new engineered foods, and (4) fortification of existing and commonly consumed foods, particularly the so called "fast"foods.

Nutrition Education to Change Food Habits

We need to utilize welfare agencies, family planning agencies to get nutritional knowledge across to low income families, particularly to teenagers, Although it is a little late, there is need to utilize the maternity wards of hospitals which provide free or low cost services to low income families, again particularly to reach teenagers. Federal and state health agencies should be authorized and directed to provide nutrition education information on television, etc.

The question is: how much can be done by way of nutrition education to change the food habits of the new youth culture. Since these habits involve new life styles, I would doubt the answer to declining youthdiets can be found solely in nutrition education campaigns. They can do something. And what they can do should be done. But at best, it will be a slow process--probably too slow to meet the urgent need for improved diets.

Nutrition education can make a particularly important contribution to the national problem of overweight. In fact, this approach is about the only one available to reduce overconsumption of sugars and fats.

Nutrient Supplementation in School Lunches

As you know, the limitations of school lunches (and breakfasts) are now being recognized, The Senate's Select Committee on Nutrition and Human Needs held hearings last December to consider the possibility of expanding the standard Type A basic lunch, to include dietary supplements containing 100 percent of the Recommended Daily Allowances of those nutrients for which minimum requirements have been determined. The supplements could be added to the regular food items, or provided in the form of wafers.

Is the supplementation the answer? It could do something but at best would be only a partial answer. When youth drop out of the school lunch system after age 14, they will adopt the food habits of the new youth culture and be lost to good diets.

New Engineered Foods

As you also well know, many nutritionists and dieticians have stressed the potential of developing entirely new types of foods often referred to as engineered foods. Considerable emphasis has come from the efforts of the Food and Nutrition Service of the U. S. Department of Agriculture which believes we can, with adequate research, look forward to a very wide range of revolutionary new foods high in micronutrients by the end of this decade. Four new engineered products have been introduced in the last two years. The most innovative has been TVP (textured vegetable protein).

Are new engineered foods the answer to declining nutrient balance? In time, they can make major contributions, particularly to raising the diets of school children. For the near future, however, they can do only a little. And they may never reach the teenagers of the new youth culture, where diets get turned off.

Fortification of Existing, Widely Used Foods

If nutrition education, supplementation, the development of new engineered foods can all be helpful, but all are apt to be limited in the 1970's in improving the diet quality of the new youth culture, then to what may we turn? We are down to the last option, food fortification and enrichment. What are the potentials for turning youth diets from "off" to "on"?

I submit that the potentials are very great, and for this segment of the population offer, perhaps the greatest single hope for improvement.

The Advantages of Fortification

There are a number of advantages of the food fortification movement.

First, is the low cost. Once research and initial marketing costs are written off, the addition of micronutrients causes little or no increase in price. This makes it possible to do something quickly and effectively for all families and particularly for poverty families, providing you can sell them the nutrition story.

-- Second, is the fact you do not try to swim upstream against the current, you go with it. You don't try to force the youth culture to change its habits, you can put micronutrients into popular fast foods. You don't try to eliminate snacking. You improve the nutrient content of snacks.

Third, it is possible to reach the entire population from infants to the elderly without specialized programs for each groups.

Some Examples of Food Fortification

The much maligned and criticized private food industry has actually been moving very rapidly toward the development of new fortified foods and fortification of old food standbys. Consider a few examples.

Case 1: A New Breakfast Cereal. One of the large manufacturers of breakfast foods (General Mills) has introduced recently a new product (Buc Wheats). A standard 4 ounce serving provides the following nutrient intake relative to Recommended Daily Allowances:

Vitamin A	4,000 USP	100% of RDA
Thiamin	1.0 mg	100% of RDA
Riboflavin	1.2 mg	100% of RDA
Niacin	10.0 mg	100% of RDA
Vitamin C	56 mg	187% of RDA
Vitamin D	400 USP	100% of RDA
Iron	10 mg	100% of RDA
Calcium	46 mg	6% of RDA

For Selected Items for Which RDA has not been established, it provides:

Vitamin E	1.7 I.U
Vitamin B6	6 mg
Vitamin B-12	1.6 mcg

And for calories, it provides:

Calories (1 cup) - 102

Since ordinarily, one doesn't eat cereals dry, one would add one cup of whole milk (6-8 ounces) and this would add 350 vitamin A I.U. units and 288 milligrams of calcium and 160 more calories.

What is the cost? About 12¢ per individual serving, or 48¢ a day for a family of four. This is highly nutritious, low-cost, fortified food.

Case 2: Fortified Milk. A large percent of milk consumed today is fortified with Vitamin D. How much has this added to the cost. On a per quart basis, it has added less than three, ten thousandths of 1¢ ($.00003).[50] Could other nutrients as vitamins C, D, thiamin , iron be added? They could. The cost - absolutely insignificant from $.000002 to $.000003.[50] Why hasn't this been done? Until recently, the addition of some nutrients as Vitamin C and iron has resulted in an off-flavor. Could research overcome this problem. Yes and nutritionists and dieticians should continue to urge this be done by the private food industry. More and more dairies are offering milk fortified with micronutrients.

Will fortification alone reach the objective of better diets? Better foods is one thing. Acceptance is another. One of the nations largest food companies recently introduced an iron-fortified milk in which flavor was not distorted and they introduced it at the same price as unfortified. The result: minimal. Consumers continued to buy the unfortified.[51/] Why? Apparently they were unaware that milk is iron deficient and milk fortified with iron is a much better purchase--at no extra cost. Changing food habits is just not very easy. It is here that constant efforts of nutritionists and dieticians are needed. There is obvious need for some new techniques. The old ones haven't worked very well among many consumers despite the fact they have more income and more education.

Case 3. The Potato Chip. Potato chip consumption has often been criticized on the ground the chips are tasty but contain few micronutrients. They are high in fats and calories. All efforts to persuade the population, particularly teenagers, to eat fewer potato chips has turned out to be a waste of time. Per capita consumption has risen steadily. This raises an intriguing question. "If you can't keep the potato chips out of the teenagers, then why not put the micronutrients into the potato chips?"

I am glad to observe that this is now being done by a number of companies. One new product called "Potato Crispers", contains four times the protein but 30 to 40 percent less fat than ordinary potato chips.[52/]

Case 4. The Snack Cup Cake. Small cakes like "Twinkies" have long been a favorite lunch and snack food of teenagers. In the past, they have contained calories, little else. Not so now. Take for example, a cream filled small cake product called "Zingers" manufactured under the Dolly Madison brand in Kansas City, Missouri.[53/] Three small lady finger cakes provide the following nutrients as percent of RDA:

Thiamine (B-1)	21%
Riboflavin (B-2)	11%
Niacin	19%
Iron	15%

The cost is 17¢

Case 5. Fruit Juices. Fruit juices, bottled, canned or in powdered form for restoration, have been on the market for many years with emphasis on taste. Now you can get them fortified with micronutrients for good diet. A recent introduction is a flavorful "Cranapple" juice. An average serving of 6 ounces is fortified with vitamin C to the extent of 30 milligrams or 100 percent of RDA.[54] The cost, about 10¢.

Case 6. Food Sticks. One of the technology fallouts from the Space program has been the development of foods light in weight, high in nutrient quality. Supermarkets now carry "Food Sticks" snack candy with a nutrient message.[55] For example, one product provides in five small snack sticks, the following nutrient content relative to RDA:

Vitamin A	10%
Thiamine (B-1)	11%
Riboflavin (B-2)	11%
Niacin	14%
Vitamin C	16%
Vitamin D	8%
Iron	8%

The cost of five sticks is about 15¢.

The Limitations and Pitfalls of Food Fortification

Are there limitations and pitfalls to fortifying foods with nutrients. There are and they cannot be ignored.

First, is the problem of overload. The risk of toxicity from too much of certain nutrients is fairly low. But monitoring of food fortification appears to be a sensible precaution.

Take for example the problem of iron deficiency. Recently, cases were reported of adults and children ingesting enormous amounts of iron preparations used in therapeutic prescriptions, with various forms of illness resulting, ranging from mild to acute.

Because so many groups in the population are vulnerable to iron deficiency, the Food and Nutrition Board of the National Academy of Sciences in 1970 recommended the amount of iron added to enriched bread be increased from the present 8 to 12.5 mg per pound to 32 mg per pound or an increase of 200 percent.[50] Many nutritionists and dieticians supported the proposal. In December, 1971, the Food and Drug Administration approved this doubling of iron by bread and flour manufacturers. In February of this year, 100 physicians warned against such a step. They said such a step might create danger from a little known disease, hemochromatosis which may be involved in liver sclerosis, diabetes, heart disease.[57] This points to the basic question cited earlier in this paper and one emphasized in 1968 by the Committee on Iron Deficiency of the American Medical Association. There is urgent need for more research to determine the incidence of iron deficiency and its implications for good health and the upper limits to iron intake and supplementation, particularly in adult males.[58]

A second limitation of food fortification is that of stability and taste. There are problems with some nutrients. Many have been overcome by research. But some remain.

A third pitfall is the matter of technical nutrient intake versus a wide variety of foods consumed in bulk. A daily intake of vitamin supplements alone would not constitute a good diet. It would be a mistake to let consumers think so.

Fourth, fortified foods, no matter how nutritious and taste appealing, will do no good on the retail shelves. And if they don't sell well, they won't be on shelves very long. Consumers will have to be educated to look for nutrient content and select accordingly.

Finally, food fortification, no matter how well it develops, cannot do anything about the No. 1 dietary problem of this country--over eating.

Part V

IX. What Can Dieticians Do to Improve Food Habits?

Organizations of dieticians have a unique opportunity to promote both good food habits and improved food products. They have the technical ability to monitor the local community. They have interest broad enough to cover all the institutions in the community. They can serve as the catalytic agent to promote better diets by prodding and stimulating the various check points in the community. What are these check points?

First, there is the school system. Ask the top administrators of the school system to appear before you and explain what the schools are doing to raise nutritional levels. And if not, why not? Ask the administrators of school lunch programs what they are doing to promote nutrition as well as serve up plate offerings. And if not, why not?

Second, the big retail food chains. What are they doing to promote better food habits? And if not, why not? Ask representatives to tell their story--if they can. Why not a "Good Nutrition Day" promotional campaign?

Third, the television stations. They have helped tear good diets down. Ask them to come before you to explain how they are helping to build them back up. And if not, why not?

Fourth, the churches. All denominations have stressed their youth programs in recent years. They are always looking for relevant topics. You can give them one: "The youth culture where good diets are getting turned off." Provide them with speakers and materials.

Fifth, the hospitals generally. What an ideal audience. Captive and immobilized. Patients have to listen. So tell them. Nutrition advice, briefly written notes on trays can get across the message. How about a "Stay well" pamphlet when they leave? To "stay well", "eat well". Doctors

will tell you the only time some of their patients eat well is when they are sick and in the hospital under the control of a trained dietitian. Shouldn't there be some carryout?

Sixth, the free clinics of hospitals for the poor. The maternity wards which provide free or low cost service to low-income teenage girls delivering unwanted children, is a very vulnerable nutrition spot in our social structure. Who is providing diet education to these girls? If not, why not?

Seventh, welfare agencies. Social case workers visit their clients regularly. What do they do to improve food habits of the poor? If not, why not? Classes in dietetics for case workers would be a good investment for welfare agencies, private as well as public.

Eighth, family planning clinics, private and public. What are these agencies providing in the way of nutrition education? If not, why not? Invite their representatives to present their programs, if any. Offer to help develop a program where lacking. Perhaps the most important single missing link in the nation's welfare-poverty program is the lack of special family planning clinics for teenagers. If one does not exist, promote it. If one does exist, help it. If demand is too great, help expand it.

Ninth, manufacturers of food products. Ask them to appear before you and explain what they are doing to improve the nutrient content of their foods. If not, why not?

Tenth, colleges and universities. The days of locus parenti are over, but that does not absolve higher institutions for some responsibility for the health of students. And what are they doing to carry out this responsibility? And if not, why not?

These are some of the many directions which dietitians can take to get more involved in community diets. No one is better equipped to do it than dietetic associations.

Part VI

X. A Brief Summing Up

The nation's food habits have undergone profound change in the post WWII years. As a result of rising income, greater mobility, urbanization, decline in group family style eating, greater use of convenience and limited variety "fast" foods, diets have risen quantitatively, but declined qualitatively. Vitamins A, C, iron, calcium are particularly lacking.

Declining diets is a special problem for the new youth culture. It is here that fairly good diets get turned off. The youth gap, beginning with the end of childhood and the achievement of social maturity is a very long, ten years or more. It will get longer in the 1970's.

There is no turning back to older food habits based on less mobility, home gardening, family group eating, regular hours, no TV watching, no snacking.

We will have to live with the new food habits. We can't abolish them. So the question is: Improve the food habits or improve the foods? We need to do both.

Unfortunately, there is no one group in the community responsible for good diets. Efforts are fragmented.

One of the local groups that <u>can</u> take the leadership is an organization made up of nutritionists and dieticians. Such an organization is the Greater Kansas City Dietetic Association. You can do it. I hope you will. This community will be in your debt if you do.

Footnotes

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> "...It is important to note, however, that both the boys and the girls ate only a little more than half the vegetables and two-thirds of the fruits they had selected. Starchy vegetables were more popular than dishes that contained leafy vegetables. Tossed salad, cabbage slaw and spinach went largely uneaten. More of fresh fruits were eaten than of canned fruits.
>
> "The protein-rich foods, usually in the main dish, were generally popular with the teenagers. Spaghetti with meat sauce, smoked sausage and frankfurters with chili were favorites".

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49. As Dr. Ruth M. Leverton, Assistant Deputy Administrator, Agriculture Research Service, U. S. Department of Agriculture points out: "Improving the iron in these lunches is difficult because there is no single group of foods that is rich in iron that can be incorporated into the Type A pattern for daily emphasis". See Toward the New, op. cit. p. 51. The Food and Nutrition Board of the National Academy of Sciences points out that recommended iron allowances for some age groups cannot be met by ordinary foods. Only one study has been made of the effects of the school lunch program and this only over one year. No effects were found between children receiving and children not receiving the school lunch. See testimony of Dr. George G. Graham in U. S. Senate, 92 Congress, 1st Session, Select Committee on Nutrition and Human Needs, Nutrition and Human Needs--1971, Part 10, December 7, 1971, p. 2563.

50. I am indebted to Frank A. Smola, Executive Assistant, National Dairy Council, Chicago, Illinois, for data on costs of fortifying milk.

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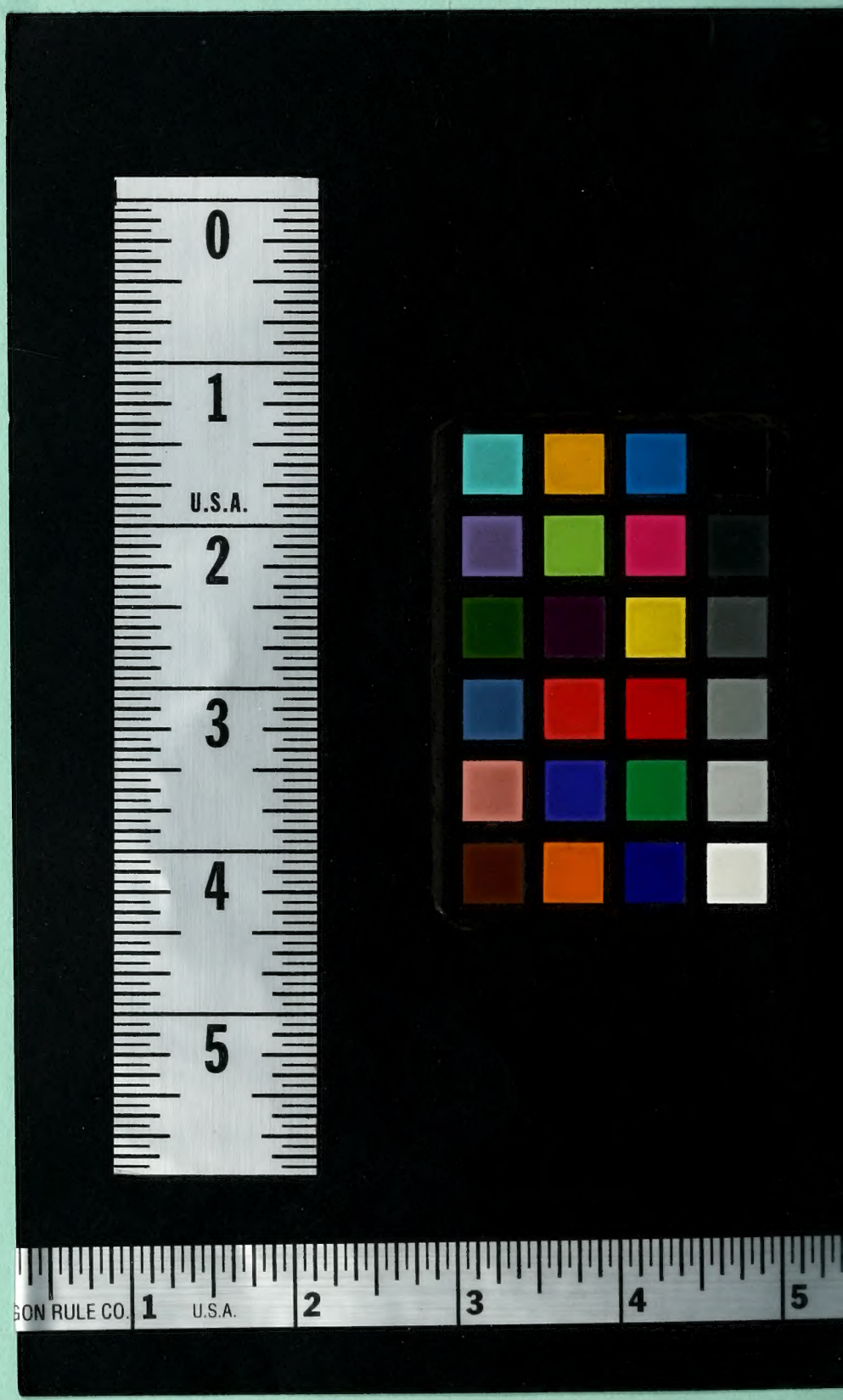
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